Vol. 5 No. 2

FEBRUARY, 1949

SPE NEWS

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SPE NEWS

Issued Monthly to all Members of the Society of Plastics Engineers

Volume 5 **Number 2**

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Detroit Section

New Books

PRINCIPLES OF HIGH - POLYMER THEORY AND PRACTICE, By Alois X. Schmidt and Charles A. Marlies, McGraw-Hill Book Co., Inc., 330 West 42nd St., New York City, $7.50, 743 pages.

The chemistry and physics of high polymers are discussed, with particular regard to the structure, size and shape of the molecules as the basis for physical properties. It should prove quite useful as a text for the plastics engineer who is concerned with understanding the properties of plastic materials. The fields of rubbers, adhesives, coatings and fibres are equally well covered. This is an excellent book and should become a standard text and general reference.

PAINT AND VARNISH TECHNOLOGY, Edited by William Von Fischer. 509 pages, numerous graphs and tables; $8.00; Reinhold Publishing Company, 330 W. 42nd St., New York City.

While this book is primarily directed at the paint and varnish industry, there are several chapters dealing with the use of plastics in the paint and coatings fields. Of special interest to plastics men are the following chapters; Alkyd Resin Technology, The Chemistry of Urea and Melamine Coating Resins, Phenolic Resins in Protective Coatings, Miscellaneous Resins in Protective Coatings, Nitrocellulose Lacquers, a chapter on Ethyl Cellulose and Parlon, vinyl resins, styrene resins, acrylate and methacrylate resins, allyls, pliolite and silicone resins; Formulation of the Volatiles in Nitrocellulose Lacquers, and Solvent—Type Finishes. In general the treatment consists of a brief description of the chemistry of manufacture, physical and chemical properties, and data on the use properties of the finished product. The book is well done, and should be of importance to that portion of the plastics industry which is concerned with coatings and protective films.

HOT AIR PREHEATING OF COMPRESSION MOLDING POWDERS: A METHOD AND APPARATUS

SECOND PRIZE
1948 SPE PRIZE PAPER CONTEST

By RONALD D. BECK
Continental Can Co., Cambridge, Ohio

INTRODUCTION

It will be the purpose of this technical paper to describe the development, process, and apparatus of preheating thermosetting molding materials, particularly the nodule type phenolic compounds, by using hot air. The cost analysis view point of making use of this process as well as the technical aspects are also presented.

PROCESS

The principle of the process that is described in this article consists of that of hot air being blown into the bottom of a funnel which has previously been partially filled with loose nodule molding powder. This

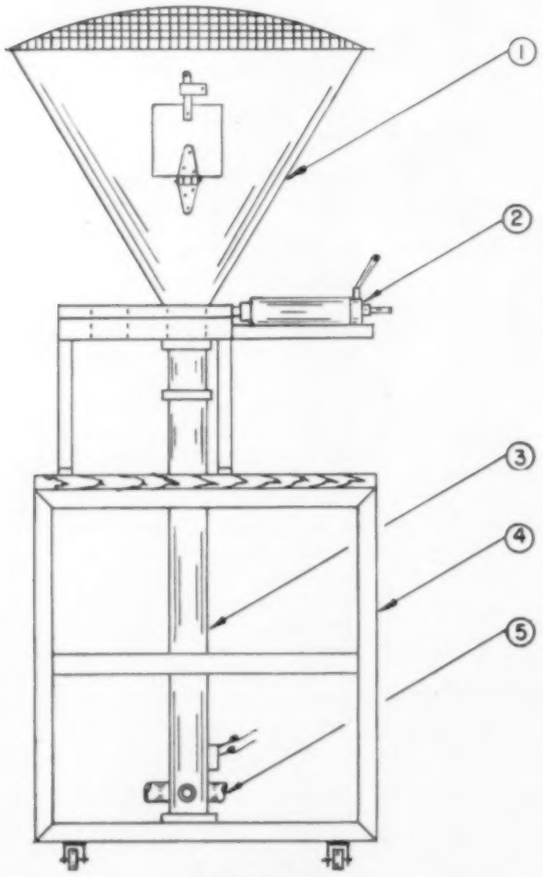
produces a fountain effect in which the powder is rendered buoyant, and as the heated air passes upward each powder particle is uniformly heated. The powder is lifted and scattered by the stream of heated air. It falls on the inclined inner surface of the funnel which forms the confining receptacle and then drops back into the stream of ascending heated air.

The air stream is formed as a hollow conical vortex with a quiescent vertical axis.

After the powder has been subjected to the desired amount of heat, the funnel is shifted rapidly to a position over a discharge port so that the loose and heated powder will then drop by gravity into an open pan for transfer to the molding press.

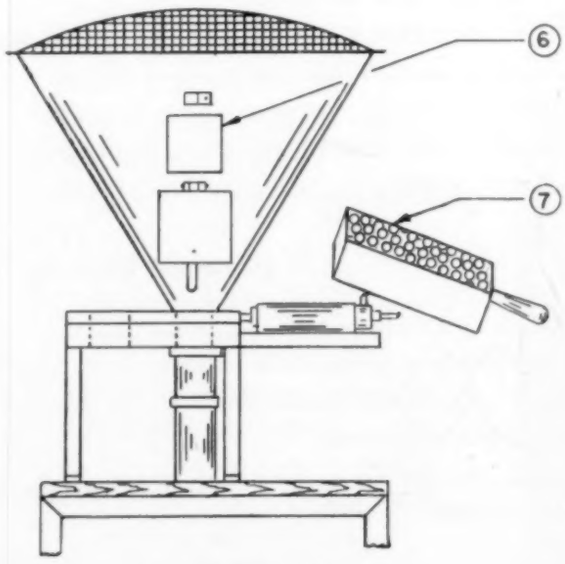
The hot air preheating apparatus described in the following drawings is portable and can be installed easily and neatly any place in a molding shop.

Drawing 1 shows a front view of the hot air heater. In this view the reader will note the general over all construction of the heating apparatus. The heating chamber consists of a sheet metal funnel 1 that is covered with woven fiberglas cloth. The fiberglas cloth permits the



DRAWING 1

This drawing illustrates a front view of the hot air heater. The metal funnel is 1, air cylinder 2, electric heating unit 3, framework of the heater 4, and air inlet 5.



DRAWING 2

This drawing illustrates the method used in loading powder into the heater. The opening in the funnel for powder is 6. The loading pan that contains the exact amount of powder to be heated is 7.

heated compressed, circulating air to escape or filter out while the loose powder is retained in the funnel.

The air cylinder is attached to the bottom of the funnel by means of a slide plate in order for the funnel to be moved over the discharge port when the powder has been sufficiently heated. The air cylinder is a reversible piston type.

Compressed air 5 is admitted at the bottom of the electric manifold type heating apparatus 3. The air passes up along the electric heater and by the time it has entered the bottom of the funnel it has reached a temperature of 450° F.

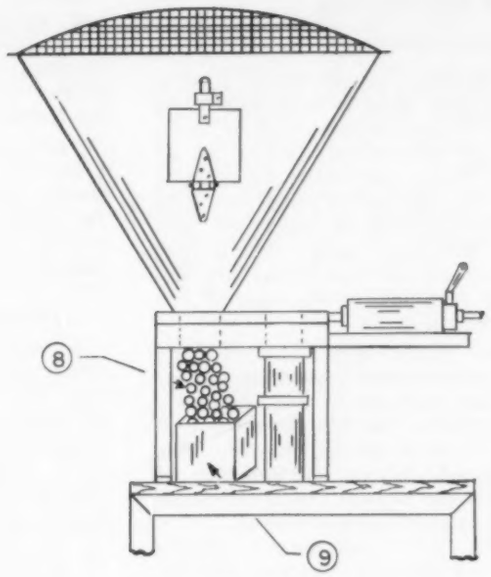
Drawing 2 illustrates the method in which the molding powder is loaded into the heater. A predetermined amount of powder is put into the rectangular shaped pan 7. The press operator will place the loaded pan into the square opening 6 in the side wall of the funnel and empty the pan. The door is then closed and the powder is ready to heat.

After the powder has been heated sufficiently it is emptied as shown in drawing 3. The air cylinder pushes the loaded funnel over the discharge port and the heated powder 8 is dropped into an open container 9 or mold cavity. A more detailed working description will be presented in pages to follow.

COST ANALYSIS

Almost all molding companies, whether they are custom molders or proprietary molders, are "converters." "Converters" will be thought of as taking loose thermosetting powder and changing or converting it to a molded article. In the plastics industry the ideal method of molding would be to take loose molding powder from the receiving truck to the mold line, preheat the powder and mold.

(Please turn to page 4)

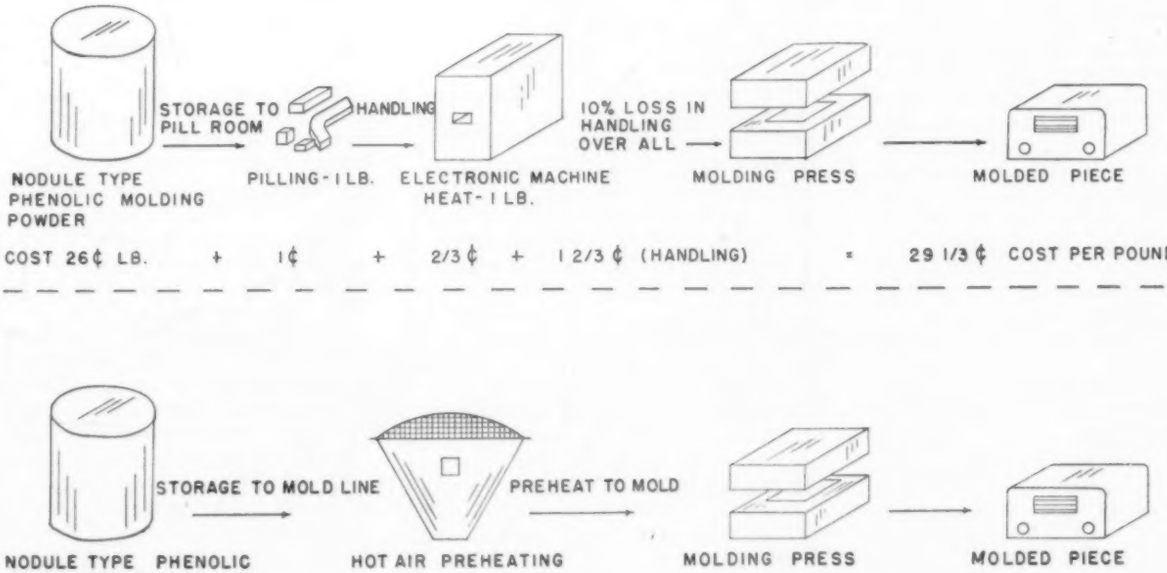


DRAWING 3

This drawing illustrates the method of discharging the heated powder. Note that the funnel has been moved over the discharge port by the air cylinder. The heated powder is 8 and the container is 9.

DRAWING 4

COST ANALYSIS OF USING HOT AIR PREHEATING AS COMPARED TO PRESENT METHOD


STORAGE TO PILL ROOM
HANDLING
10% LOSS IN HANDLING OVER ALL
NODULE TYPE PHENOLIC MOLDING POWDER
PILLING - 1 LB.
ELECTRONIC MACHINE HEAT - 1 LB.
MOLDING PRESS
MOLDED PIECE
COST 26¢ LB. + 1¢ + 2/3¢ + 1 2/3¢ (HANDLING) = 29 1/3¢ COST PER POUND
STORAGE TO MOLD LINE
PREHEAT TO MOLD
NODULE TYPE PHENOLIC MOLDING POWDER
HOT AIR PREHEATING
MOLDING PRESS
MOLDED PIECE
COST 26¢ LB. + 1/10¢ = 26 1/10¢ COST PER POUND

Air Preheating

(Continued from page 3)

The normal procedure in a custom molding shop is to receive loose powder from a common carrier, store it in a warehouse, convey it as needed to the pill room, make pills, carry the pills to the mold line, preheat the pills in an electronic machine, and then mold. All of the above mentioned operations are expensive and add to the cost of the finished articles.

Some proprietary molders are using self contained molding presses in their production and assembly lines similar to the way that a lathe would be used. By using this method of hot air preheating of the molding powder, much unnecessary machinery is eliminated.

If the reader will study drawing 4, he will immediately note the advantage of utilizing this process wherever it is practical in a molding shop. If hot air preheating is utilized there is a savings exceeding three cents per pound on the molded piece as compared to present methods.

The initial cost to build a hot air preheater of this type is approximately $450. In comparison a high frequency or electronic machine would cost $5,000 to accomplish the same results.

APPARATUS AND DRAWING

In drawing 5 the reader will see constructive views of the operation and physical make up of the hot air preheater.

The funnel 10 is made of .050 inch thick sheet iron and covered with 128 fiberglas cloth and 16 mesh metal screen wire. A loading door 11 has been cut into the side wall of the funnel to provide easy loading of the molding powder.

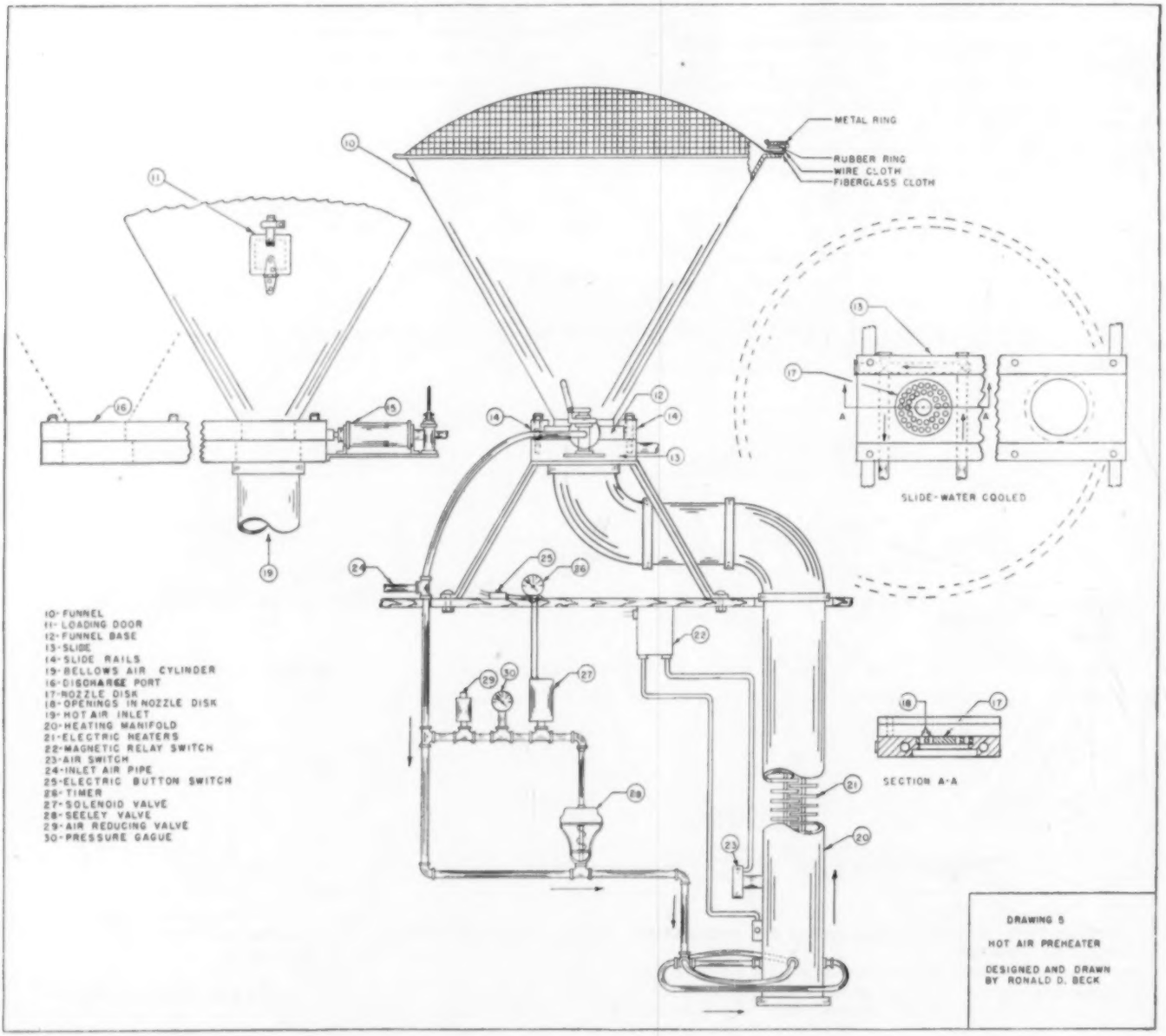
The funnel is mounted to a base 12, slide 13, and slide rails 14. The base is connected to a Bellows air cylinder 15. This air cylinder shifts the funnel assembly back and forth over the heating and discharge port 16.

The slide 13 is water cooled in order to prevent the plastic powder from sticking to the metal slide during the heating cycle.

The slide 13 has a vertical opening in the bottom in which is mounted a nozzle disk 17. This disk is made of stainless steel which is corrosion resistant.

The disk has a solid center surrounded by annular and concentric series of upwardly directed openings 18. The solid center makes the plastic granules spread laterally into the quiescent area and also outwardly toward the walls of the containing chamber.

(Please turn to page 12)



REPORTS OF THE NATIONAL PROFESSIONAL ACTIVITIES COMMITTEE

The Professional Activities Committee reports for the past year show much work in progress, and two finished reports. Milo R. Gerow, national chairman, of the Reynolds Metals Company, suggests to all working committees, that a first step in getting work under way is to prepare a bibliography of the literature in the field being studied.

Reports of the individual committees follow:

LAMINATES; chairman, Harry Kline.

This report is an extensive bibliography of the literature, and is the result of two years work by the committee. In view of its great value, and because of its length, it is planned to devote an entire issue of the SPE News to its publication in a "Laminator's Issue" in the near future.

AUTOMOTIVE: chairman, J. K. Totten.

This report is published in full elsewhere in this issue.

HOUSEHOLD APPLIANCES: chairman, Dale C. Gerber, vice-chairman, F. C. Martin.

While the report is not yet ready for publication, it has been circulated for comment and final revision. This committee has a proposed specification for thermoplastic materials for enclosures for electrical household appliances.

QUALITY CONTROL; chairman, Jerome Formo.

A bibliography is being accumulated, and it will be issued when it is sufficiently complete. After some more information is received from users of quality control, a paper suitable for publication will be formulated and submitted for formal approval.

Needed research projects suggested by the A. S. T. M. Subcommittee VIII on Research of Committee D-20 on Plastics, which are given below, may serve the Professional Activities Committees of SPE as a guide. The list of needed research follows;

GROUP A: Behavior of plastics under mechanical stresses with time and temperature as variables, that is, stress versus strain relationships.

GROUP B: Studies of the wear abrasion, scratch, or mar resistance of plastics and with the object of relating these properties to other mechanical properties or to the detailed chemical or physical structure. Specifically, a study might be made of the energy required to scratch, indent, abrade, or otherwise deform the surfaces of plastics.

GROUP C: Studies of the permanance of plastics in various environments with the object of learning what chemical and physical changes occur in plastics as a result of aging, of elevated temperatures, of sunlight, and of weathering.

GROUP D: Studies aimed at the compilation of data which are not currently available.

GROUP E: Studies of methods for characterizing the chemical and physical structure of plastics.

GROUP F: Methods of evaluating coated fabrics.

GROUP G: Development of rapid test methods, the results of which could be qualitatively related to ASTM standard test methods.

Some of the specific research problems included in these classifications are as follows:

1. Study of the physics of behavior of plastics under impact with the object of relating behavior under high rates of stressing to that under the lower rates encountered in ordinary testing.

2. Studies of plastics under tensile, compressive, flexural, and torsional stresses with the object of adjusting such variables as geometry of the specimen, points of load application, and rates of stressing, so the standard tests may all be made under comparable conditions.

3. Systematic studies of the flow properties of the various resins with special attention to rates of shear, pressures, and temperatures in the ranges encountered in molding and extrusion. This information should lead to a better understanding of flow properties and to flow tests which better characterize the flow properties.

4. Development of a method for describing the creep of plastics such that from a few measurements the rate and amount of deformation can be predicted. This method, to be most useful, should be applicable over wide temperature ranges and should permit prediction of deformation under low loads over long periods of time. Correlation of creep and second order transition temperatures might indicate temperature at which marked changes in creep characteristics occur.

5. Studies of the effects of reinforcing pigments on the physical and chemical properties of plastics.

6. Studies of the time after molding required for molded articles to attain their final dimensions, and of methods for shortening this time.

7. Development of an accelerated weathering device which correlates fully with outdoor exposure; to be most useful, such a device should accommodate a number of specimens each of which should be large enough for several physical tests and the device should require a minimum amount of attendance — not more often than once in 24 hours.

8. Development of physical or chemical methods for determining or estimating the degree and course of deterioration of plastics under various environments. A method for detecting the very early onset of such deterioration would be helpful in shortening the time required for studies in permanance.

9. Development of methods for the identification of plastics including plasticizers and other components.

10. Development of methods for the estimating of the degree of cure of thermosetting resins.

11. Development of standard methods for determining compatibility of plasticizers, softeners, lubricants and the like, with various resins, cellulosic derivatives, etc.

DR. D. S. FREDERICK IS ELECTED PRESIDENT OF PMMA

Dr. D. S. Frederick of Philadelphia, vice president of the Rohm & Haas Company, was elected president of the Plastic Materials Manufacturers Association at its annual meeting January 13. Felix N. Williams of Springfield, Mass., vice president of the Monsanto Chemical Co. and general manager of its Plastics Division, was elected vice president of the association. Officers re-elected are F. H. Carman, secretary-general manager, and John E. Walker, treasurer. Newly elected members of the board of directors are J. R. Hoover. vice president of B. F. Goodrich Chemical Co. and Alan N. Mann, chairman of the board of Catalin Corp. of America. Directors continuing on the board in addition to Dr. Frederick and Mr. Williams are D. M. Rugg, vice president, Koppers Co., Inc., W. W. Knight, Jr., general manager, Plaskon Division, Libbey-Owens-Ford Glass Co., and S. E. Palmer, assistant vice president, Tennessee Eastman Corp. Arnold E. Pitcher, E. I. duPont de Nemours & Co., J. L. Rodgers, Jr., American Cyanamid Co., and W. S. Landes, Celanese Corp. of America, former presidents of the association, were named to serve the board of directors in an advisory capacity.

The Resin Adhesives Division of the association elected as its chairman P. A. Macy, chief chemist, Perkins Glue Co., Lansdale, Pa.

CONFERENCE FEATURES TECHNICAL PAPERS

Petretti, Dunnican, Moulton, Clark Are New Officers

Mario Petretti

Mario Petretti, general manager of the Plastics division of the Noma Electric Company, was elected national president of the Society of Plastics Engineers during the three day Annual Technical Meeting in Philadelphia at the Bellvue-Stratford Hotel January 19 through 21. Well known, well liked and respected throughout the plastics industry, Petretti looks forward to a year of increasing growth and strength for the SPE, a clearer definition of the aims of the society, and a continued increase in the services rendered the individual member.

William Dunnican, an "old-timer" in the plastics industry and long an energetic worker for the SPE, was elected vice-president. Dunnican is with the plastics division of the Borden Co.

Elected secretary, in addition to his continuing work as chairman of the national Publications Committee, is **M. Scott Moulton** of the B. F. Goodrich Chemical Company. Moulton's quiet energy and ability to get things done will be the asset to the national organization that they have long been to the Cleveland section.

C. Todd Clark, whose name has often appeared in this publication over news releases from the St. Louis Section, was chosen Treasurer Clark is with the F. Burkhart Company.

Appointed to the post of executive secretary was Bess Day, who has been in charge of the national office for the past year. Under her direction the work of the office has been systematized and improved.

Annual Meeting

The annual meeting was held following a luncheon in the banquet room in the Bellvue-Stratford. Here the members present voted to submit to the membership as a whole, for vote by letter ballot, several proposed changes in the constitution. The list of these proposed changes was published in the December issue of the News; the most interesting of which is the establishment of a new grade of membership to be known as the Professional Plastics Engineer. Ballots should be in the mail in a few weeks. BE SURE TO VOTE. Return your ballot promptly. When the result of the votes is known, a new printing of the constitution will be made, so that every member can have one for ready reference.

Unexpected fireworks followed the reading of committee reports by the national committee chairmen. The treasurer's report showed strong financial recovery during the past year, with the retiring of an indebtedness of $2100, due largely to Bess Day's capable direction of the national office. The report showed $1900 indebtedness still outstanding in the form of notes to the Chicago and Detroit sections.

A member rose to his feet and was granted the floor.

"Gentlemen," he said, "The national office owes $1900. There are more than 2000 members. That's less than a dollar a member—less than you or I pay to buy a friend a drink, or spend on a show. I make a motion that voluntary contributions be call-

(Left to right): Wm. J. Dunnican, Mario Petretti, M. Scott Moulton, national officers for 1949. C. Todd Clark is not shown.

Major Thomas E. Orr receiving SPE's highest honor, a Life Membership, in appreciation of his work for SPE. Retiring President J. H. DuBois presents the certificate.

George W. Clark (left), chairman of the Prize Paper Committee presents A. R. Morse with check and certificate for first prize, in 1948 Prize Paper Contest.

ed for so that this debt can be wiped out." With the seconding of this motion, about a hundred dollars was collected from the assembled members.

Also at the annual meeting was the presentation to Major Thomas E. Orr, past president of SPE, of a life membership for his devoted and outstanding work over a period of years for the organization.

Prize Paper Contest Winners were presented with certificates and checks. The first-prize winning paper, by Ren Morse, excited considerable comment throughout most of the session. This paper was printed in the January issue of the News.

Technical Sessions

Attendance at the presentation of the technical papers was excellent. In no case did the number of listeners fall below fifty, and was over 200 for some papers. This sort of record is not often approached by even the largest technical societies.

While it was impossible this year to publish the papers as a unit, many of the papers will appear in the News; and those papers published elsewhere will be noted. Next year it is the intention of the publications committee to publish the papers presented in full, for free distribution to the members of SPE in a single, attractive volume.

Conference Booths

The Conference Booths were well set up and well attended, providing a point of contact between producers and manufacturers. This type of industrial contact again proved its great usefulness in providing new contacts, new ideas, in aiding the molders with their specific problems, and in renewing old friendships.

Diners at SPE Annual Meeting include Bess Day, executive secretary of SPE.

A typical conference booth.

Television broadcast of the exhibits took place the night of Friday, January 21. The broadcast was from films made during the previous days, and included the showing of many of the items of more spectacular public interest from the Modern Plastics Awards display.

Great credit should be given to the men who were responsible for the actual setting up and running of the conference, and thanks should be given to their companies which permitted them the use of company time and often the use of company office help.

AUTOMOTIVE END-USE SPECIFICATIONS

Report of Prof. Activities, Automotive Committee
J. K. TOTTEN, *Chairman*

This specification covers plastic parts, either thermoplastic or thermosetting used for interior or exterior applications having three dimensional ornamentation.

General Requirements:

1. The plastics materials for which such parts are made shall be identified by name.
2. Material samples submitted must meet the minimum requirements set forth in material specifications.
3. Parts shall compare favorably with the master samples.
4. Molded parts shall be free from blemishes, such as orange peel, weld marks, crazing, etc.
5. Molded parts shall be furnished the purchaser and approved before production quantities can be released.
6. Each molded part shall be of such size and shape as specified on the part drawing.
7. All parts shall be finished off smoothly; flash, gates, etc., removed.
8. All visible surfaces of the part shall be highly polished unless otherwise specified.
9. Five (5) samples of each part shall be required for testing.

Parts test Specifications:

1. All parts to be tested shall be attached in the normal manner to the assembly of which each is a component. This assembly shall be the unit to be cycled through indicated stability tests.

II. Stability Requirements:

A. The parts covered by this specification shall meet the following stability requirements.

1. Accelerated Aging Test
2. Hot and Cold Test
3. High Humidity Test
4. Colorfastness to Light
5. Outdoor Exposure

B. One—each of the five (5) parts required shall be subjected to each test listed above. (Outdoor Exposure Test excepted).

C. During or as a result of any of these tests, parts shall not wrap, crack, craze, check or sustain a dimensional change outside the allowable tolerances specified on the part drawing.

D. Bright metal surfaces shall show no indication of oxidizing, peeling, blistering, tarnishing or other discoloration.

E. Painted surfaces shall show no indications of checking, peeling or chalking or more than slight fading.

F. In general parts shall not sustain any change more than that permitted by the maximum allowable tolerances as approved by the purchaser.

G. Outdoor Exposure Test. This test to run concurrently with service requirements as a basis for establishing the long range performance of a given part.

III. Light reflection (Bright Metal Surfaces).

The bright metal surfaces shall reflect not less than 40% of the measured intensity of any light source.

Test Procedures:

I. Stability Requirements

The stability requirements listed in this specification shall be determined by the following methods:

A. Accelerated Aging Test

A basic qualifying test to evaluate new materials, parts, or design changes consisting of 6 cycles of the following.

1. 8 hours exposure to 100% R.H. at 100°F., then
2. 8 Hours exposure to —25°F. plus or minus 5°, then
3. 8 Hours exposure to dry circulating heat at 150°F.,—plus or minus 10°F.,—0°F. Relative Humidity not to exceed 40%, then,
4. 8 hours exposure to Fadeometer or ASTM D-620 Sun Lamp.

Phases 1, 2, 3, 4, comprise one cycle. The sequence must not be changed.

B. Hot and Cold Test

A qualifying and/or inspecspection control test consisting of alternating exposures to dry heat and sub-zero temperatures.

Two (2) cycles required.

1. 8 hours exposure at —25° F., plus or minus 5°F.
2. Condition at room temperature for 30 minutes.
3. 8 hours exposure at 150° F., plus or minus 5°F.
4. Condition at room temperature for 30 minutes.

C. High Humidity Test.

Continuous exposure to high humidity for 500 hours at 100% R.H. 125°F. plus or minus 5° F.

D. Colorfastness of Plastics To Light.

1. ASTM D-620 Method. S-1 Sun Lamp. 500 hour exposure

or

2. Atlas Fadeometer, continuous exposure for 500 hours.

E. Outdoor Exposure.

1. In Florida

or

2. In Arizona

Continuous exposure for one (1) calendar year. Parts shall be placed in a position of a 45° angle facing south above a black surface. The nearest point of the plastic to the black surface shall be ½".

II. Light Reflection

Test Procedure

A beam of light of known intensity shall be directed at a given area of any portion of the bright metal surface. The amount of reflected light shall be measured by means of a photo-electric cell in combination with milliammeter. Any alternate method of measuring this property may be used if it compares favorably with the method described above.

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NEW YORK PLANS FOR 1949 MELAMINE TABLEWARE DISCUSSED

By A. M. MERRILL

The New York Section has embarked on a program of complete revitalization to increase membership and improve the level of its meetings. To start the ball rolling new committees for program, membership, and house functions have been organized and many innovations planned for forthcoming meetings. In addition to careful selection of speakers and meeting subjects, preliminary plans call for many "extras" such as "My Specialty" talks by members, intra-section debates on how to solve specific problems, door prizes, table favors, and others.

The New York Section held its first meeting of the year on February 8 at the Hotel Sheraton. Approximately 40 members and guests attended the dinner and heard William H. McHale, advertising manager, plastics department, American Cyamid Co., speak on "Melamine Tableware," and John E. Currier, technical representative, F. J. Stokes Machine Co., discuss "Automatic Molding."

Mr. McHale discussed the development of melamine tableware, beginning with 1944 when American Cyanamid began investigating peacetime applications for the plastic. The different melamine grades were tested for appearance, moldability, resistance to staining, etc., and Melmas 1077, an alpha-cellulose filled type, was selected. Tableware designs were prepared and test-sets of melamine ware molded. These sets were subjected to extensive service tests in various city restaurants. Although good results were obtained, these service tests indicated the importance of proper handling by restaurant employees, proper washing procedures, and the need for periodic stain removal treatments. These factors were noted, further investigated, and then remedied by the recommendation of proper procedures. Melamine tableware is enjoying increasing popularity, despite its relatively high initial cost, because of its much longer service life and decreased breakage factor when compared with chinaware.

Mr. Currier preceded his talk with a showing of the Stokes color-sound film, "Robots at Work" depicting the operation of the company's automatic presses. The speaker began his talk by defining an automatic molding press as one in which the machine completely takes over operations after it is set and the hopper filled, and delivers finished parts to a receiver. The Stokes line of automatic presses now includes three standard models, two closure presses, and two stripper presses.

Advantages of automatic molding, according to Mr. Currier, include: (1) low labor cost, since skilled employees are not needed and one man can tend up to 10 machines; (2) low mold cost, because continuous production on small molds yields high output; (3) 24-hour production; (4) uniform quality because of machine-controlled cycling; (5) material savings through accurate and exact feedings; and (6) reduced inventories, since molding can be geared to customer demand. Limitations of automatic molding are: (1) cannot be used with inserts; (2) avoid undercuts; (3) knockout pins are necessary; (4) thick sections are not economical; and (5) maximum bulk factor is 3.5:1.

Selection of automatic molding machines should be based on suitable cost studies, Mr. Currier said. These studies should include careful attention to part and mold design; the mold design service offered by Stokes; calculation of number of cavities; material cost; heat and power cost; press labor cost; finishing, depreciation, amortization, and maintenance costs; and profit margin. Consumers of molded parts have given almost universal approval to automatic presses for the reasons given above, the speaker stated, and it is becoming apparent that custom molders must modernize their shops by installing equipment incorporating labor saving devices.

The meeting was presided over by vice president Sam Silberkraus, Regal Molding Corp., in the absence of president Stanley Bindman, Noma Electric Corp. In the business session preceding the talks, reports were heard from secretary - treasurer George Barron, Ideal Plastics Co., and program committee chairman Palmer Humphrey, consultant. Table favors consisting of attractive plastic salt-and-pepper sets were distributed through the courtesy of George Leaf, Leaf Plastics Co., and the meeting closed with a drawing for door prizes, including one contributed by Bruno Wessinger, Wess Plastic Molds, Inc.

The Section's next meeting, on March 8, at the Hotel Sheraton, will feature a paper on "Trouble Shooting of Molding Problems," by F. J. Donohue, technical service manager, thermosetting molding materials, Monsanto Chemical Co., and a talk by Mr. Wessinger entitled, "Complaints of a Mold Maker."

The new officers and directors of the New York Section for 1949 are as follows: president, Stanley Bindman, Noma Electric Corp.; vice president, Sam Silberkraus; secretary-treasurer, George Barron, Ideal Plastics Corp.; national councillor, Nicholas V. Fasano, Washington Molding Co., Inc.; and directors, three years—Mr. Barron, Edward V. Walsh, Tech-Art Plastics Co., and Bruno Wessinger, Wess Plastic Molds, Inc.; two years—George Rice, American Cyanamid Co., Palmer Humphrey, consultant, and Mr. Silberkraus; and one year—Mr. Bindman, Mr. Fusano, Saul Blitz, Noma Electric Corp., and ex-president Arthur Nufer, Bakelite Corp.

The new committees and their members are as follows: Publicity and Program—Mr. Humphrey (chairman), Arthur M. Merrill, "India Rubber World," Herbert Proske, Wheelco Instruments Co., and Arthur S. Jacobs, Renwal Mfg. Co., Inc.; Membership—Mr. Rice (chairman), Sam Stone, Eagle Plastics Corp. and Robert Boucher, Bakelite Corp.; and House — Mr. Walsh (chairman), Messrs. Boucher, Wessinger, and Fasano, Leo Adenbaum, Accurate Molding Corp., and Joseph A. Joyce, Plaskon Division of Libbey-Owens-Ford Glass Co.

Section Notes

CHICAGO met jointly with SPE on January 12th to hold an open forum discussion on "Should the Chicago molders adopt the Miami Valley Molders' Plan?" As an added feature, the sound movie "A Scientific Approach to Better Plastics" was shown. The movie was produced by MIT and PMMA together with SPI.

NORTHERN INDIANA elected Wayne I. Pribble, of Barrier, Pribble & Co., as their president for the coming year. Also elected were; Vice-President, Cecil Armstrong; Secretary - Treasurer, Walter Schaefer, Wayne Plastic Products. Section directors also include Alvis Barrier of Barrier, Pribble & Co., Frank Butters of General Electric, Karl Koehler of Wayne Plastic Products, Ferris Neuman of U. S. Rubber, Harry Temple of the Square D. Co., and George Williams of U. S. Rubber.

EASTERN NEW ENGLAND elected George E. Pickering as president. Melvin S. Haas was elected Vice-President, Prescott F. Huidekoper Treasurer, and John P. Queeney Secretary, while Albert Dietz remains as national director. At their meeting at the Hotel Vondome, February third, T. Norman Wilcox, General Electric, spoke on "New Plastics Techniques."

OELMAN HEADS ACTIVE MIAMI VALLEY

New Directors have been elected by the membership of Miami Valley Section to serve for the next three years. They are Robert W. Gerdes, Plastic Moldings Corp., Cincinnati, O.; Martin H. Kasch, Kurz-Kasch, Inc., Dayton, O.; and John W. Brierly, Bakelite Corp., Dayton O. At the first Board of Directors meeting in 1949 new officers were elected; President, Walter F. Oelman; Vice-President, Robert W. Gerdes; Secretary, John L. Russell; Treasurer, Martin H. Kasch. The new officers took over at the first membership meeting of 1949 held on Thursday, January 6, at the Golden Lamb Hotel in Lebanon, O. Dinner was followed by a short year-end report by retiring President G. J. Wilson.

The evening's chief speaker was Mr. A. R. Morse, Reed-Prentice Co., who talked on "What the National Society of Plastics Engineers means to the local Chapter" and "Current trends in the Plastics Industry". Mr. M. Scott Moulton, Cleveland section Secretary was also present and commented on the spirit shown in Miami Valley Section.

Membership in Miami Valley Section took a very decided increase during 1948, beginning with 65 members in January and reaching 91 at the close of the year. In recognizing this achievement, Mr. Oelman, our new President, paid tribute to the outgoing officers and stated that much of this phenomenal success should go to the untiring efforts of Mr. G. J. Wilson, our past President.

Other active members of Miami Valley Section who put forth considerable effort during 1948 are Carroll Jensen for his publicity work, and assistance at meetings, David Lucid, for Program Committee work and the behind the scenes labors of Chester Kruger and Harry E. Kniess.

TOLEDO ELECTS

By GEORGE A. TAYLOR

The Board of Directors of the Toledo Chapter of the Society of Plastic Engineers elected the following officers on January 18, 1949:

President, Mr. Harry L. Hatch (Plaskon Division, Libbey-Owens-Ford Glass Company).

Vice President, Mr. Andrew Kassay (Plaskon Division, Libbey-Owens-Ford Glass Company).

Secretary, Mr. Eric Kohler (K & M Machine Company).

Treasurer, Mr. Richard Serrick (Toledo Plastics).

The Toledo Chapter is starting the new year with the largest membership in its history.

The next meeting was held on February 3, 1949, at 6 p. m., at the Toledo Yacht Club. Mr. Keith Hall of the Defiance Machine Works spoke on the Tri-Dyne press which presents a new development in transfer molding. Mr. Hall explained how this machine is an improvement over the conventional methods of transfer and plunger type molding.

N. W. PENNSYLVANIA ACTIVITIES

By PAUL ROCHE

The election has come and gone in Northwestern Pennsylvania Section and two new names have been added to the Board of Directors, Robert S. Wilson, Jr. and Harold H. George. Having been re-elected to a new 3-year term, Paul C. Roche will continue to serve on the Section Council. Officers for 1949, elected at a directors' meeting on Thursday, January 13, 1949, are as follows:

President—R. S. Wilson, Jr. (Sylvania Elec. Prod., Inc., Warren, Pa.)

Vice President—J. C. Stokes (Perry Plastics, Inc., Erie, Pa.)

Secretary — H. H. George (Perry Plastics, Inc., Erie, Pa.)

Treasurer—N. R. Reyburn (Applied Plastics, Div'n Keystone Brass Wks., Erie, Pa.)

Bob Wilson is bound to give the section a capable and energetic administration, having shown unusual interest as a member whose opinions were always heard and heeded. The other new officers on the panel will render able support. Nat Reyburn, immediate past president, will be section representative on the National Council, and Jerry Stokes will represent the SPE on The Erie Engineering Societies Council, with Ed Roberts acting as alternate delegate. This latter organization is a new undertaking aimed at increasing the degree of service rendered by approximately twelve technical societies having local chapters.

Robert A. Kling, Chief Mechanical Engineer, Erie Resister Corp. acted as "Speaker Sponsor" at the January meeting of the section, which was by way of a homecoming for Jack Morrison, Vice President of Detroit Mold Engineering Co. who spoke on "Mold Steels and how to Use Them." Jack was originally from Erie where he and Bob Kling were co-workers at Erie Resistor Corp. Jack did great credit to the assigned topic and very pronounced requests for reprints of the talk were expressed.

John P. Brecker has recently become asssociated with Louis Marx Co. of Erie, Penna. (Plastics Division), having previously been connected with Rathbun Molding Co. of Salamanca, N. Y. Jack's transfer from Buffalo Section SPE to Northwestern Pennsylvania Section is being effected.

NEWARK HEARS BURNS AND BEEKMAN

By PETER W. SIMMONS

The Board of Directors' meeting was held just previous to the general meeting. The directors are as follows:

Harold E. Frutchey, Pres.,Thomas Mfg. Company, Newark, N. J.

Russell B. Akin, V. P., E. I. duPont de Nemours & Co., Inc., Arlington, N. J.

Edward B. Soules, Secy-Treas., Detroit Mold Engineering Co., Hillside, N. J.

James T. Growley, Celanese Corp. of America, Newark, N. J.

Milo R. Gerow, Reynolds Metals, Inc., New York, N. Y.

T. Smith Taylor, U. S. Testing Co., Hoboken, N. J.

Gilbert L. Peakes, Bakelite Corp., Bound Brook, N. J.

Eugene L. Fortney, Fortney Mfg. Co., Inc., Newark, N. J.

P. W. Simmons, The Dow Chemical Company, New York, N. Y.

R. Frackenpohl, Newark Die Company, Newark, N. J.

Islyn Thomas, Thomas Mfg. Corp., Newark, N. J.

J. H. DuBois, Shaw Insulator Co., Irvington, N. J.

The general meeting was highlighted by two excellent talks, one by Mr. Robert M. Burns, Chemical Director of Bell Telephone Laboratories, Inc. His topic was "The Use of Plastics in the Communications Industry". This talk was particularly interesting from the standpoint of what the communications industry does to assure the right plastic for a specific application. The second talk of the evening was delivered by Emile McK. Beekman, Chemical Engineer, Signal Corps Engineering Laboratories. His topic was "Selected Problems in the Application of Synthetic Resins and Plastics to Signal Corps Equipment." He covered this topic thoroughly, pointing out some of the shortcomings of materials used in Signal Corps equipment during the last conflict, as well as some improvements which have been made on that equipment since that time. He displayed, in conjunction with his talk, samples illustrating problems on which they are now working.

ENTER SPE's THIRD PRIZE PAPER CONTEST

W. NEW ENGLAND TALKS MOLDS

By T. W. NOBLE

On January 5th, a meeting was held at the Hotel Sheraton, Springfield, Mass., at which the subject, "Responsibility for the Design of Molds and their Sussessful Operation", was discussed. Mr. C. W. Coe of the Shaw Insulator Company covered the subject from the molders' point of view, and Mr. John Mallory of Parker Stamp Works discussed it from the mold designers' and mold makers' angle. Both speakers were in agreement as to the function and responsibility of the two groups represented and concurred in the opinion that the molder should be responsible for the design of the mold, and the mold maker should be responsible for meeting specifications and blueprint detail as well as the proper mechanical functioning of the mold. It was pointed out that the mold maker could quite often be of valuable assistance to the molder by pointing out a more efficient or simpler method of mold construction which would not change the molding efficiency of the mold, but which would save considerable time and money in the actual fabrication of the mold itself. Such changes should be made only with the full knowledge and approval of the molder. Both speakers pointed out that the material supplier should not be expected to design either parts or molds, but could offer valuable assistance in occasional cases because of their general knowledge.

An interesting discussion period followed the speakers' discussion.

OTTO HEADS ST. LOUIS

By C. TODD CLARK

Our first monthly meeting of the new year conducted by our recently elected president, Don Otto, was a success in many ways.

All members and guests who made reservations for dinner, attended despite a heavy sleet and freezing storm last Tuesday night. The audience really enjoyed an excellent talk by Mr. John M. Boulais, Buyer of Housewares, Stix, Baer & Fuller Co., one of the leading department stores in St. Louis.

The usual open discussion period after his talk was equally valuable to the audience as well as to him as a buyer.

Our program committee is starting out pitching a good game, giving our membership a good assortment of deliveries so interest in our activities will not be knocked out of the lot.

P. S.: It is a sad commentary that Mr. Boulais should have to plead for more and better informative labels on our plastic, molded or fabricated items.

RHODE ISLAND

By M. M. SUBA

The Rhode Island and Southwestern Massachusetts Section met January 12, 1949 to hear James E. Wilson, Sales Manager of Watson-Stillman Company, Roselle, N. J., talk on Pin-Point Gating of Injection Molds. Mr. Wilson's talk was followed by a film entitled "Product Design and Molding Technique for Thermosetting Materials." This film was prepared by the Bakelite Corporation.

A show of hands at this meeting indicated a desire on the part of the membership to make their next meeting on February 9 a dinner meeting. The board of Directors accordingly authorized Mr. C. J. Cowan to proceed with the necessary arrangements.

Section Notes

BALTIMORE - WASHINGTON heard J. H. Plummer, Vice-President of Glass Fibers, Inc., speak on the topic "Plastics and Glass" at their meeting February 15th, in the auditorium of the Materials Testing Laboratory, National Bureau of Standards.

BUFFALO was host to Herbert S. Spencer, Advertising Manager of Durez Plastics and Chemicals, who spoke on "Plastic Selling is Telling and Telling" at the meeting January 21st, at the Park Lane Restaurant. Norton Laboratories of Lockport sponsored a display, with Alan A. Sim in charge.

CLEVELAND - AKRON met in Cuyahoga Falls to hear Fred Wehmer of the Minnesota Mining and Manufacturing Company, speak on "Engineering Aspect of Adhesives" on January 28.

Arthur W. Logosszo, Nutmeg Chrome Corp., talked on "Problems in Chrome Plating Plastic Molding Dies" to the February 2nd meeting of WESTERN NEW ENGLAND Section in Springfield, Mass.

SOUTH TEXAS met January 26th to hear James S. Wilson of the Watson-Stillman Co., speak on "Plastic Molding Tools, Machines and Metheds," at the Ben Milam Hotel. The February meeting was host to E. R. Burtler, Humble Oil Company, who discussed "Butyl Rubber and Its Applications". These meetings were open to the public.

W-S MAKES 48 OUNCE MACHINE

Paralleling the trend toward large capacity injection molding, this huge 48-ounce machine was recently introduced by the Watson-Stillman Company, Roselle, N. J. Said to be the largest standard single-shot automatic injection molding machine, it materially increases the size-range of products which can be injection molded in one piece from thermoplastics. 18 of these machines, some of which are already in successful operation, are being placed in plants of leading manufacturers.

The 48-ounce machine is provided with an automatic stuffing arrangement which increases its rated capacity by 40 to 50 per cent.

The W-S 48-ounce Injection Molder is a complete, unit-powered machine arranged for individual motor drive and powered by radial piston type oil pumping equipment. It is equipped with the new W-S heating cylinder, especially designed to deliver near-capacity shots of such "derating" materials as polystyrene, without stuffing. The electrically controlled material feed is self-compensating; cylinder and plunger are service-plated with chromium. Both manual and automatic single cycle controls are available through a selector switch.

Watson - Stillman Co., announces their new Advertising Agency as of January 1st, 1949, McNevin-Wilson-Dalldorf, Inc., Suite 1530, 55 West 42nd St., New York 18, N. Y.

Product studies are being made by the agency and plans are in progress for the promotion of sales of both the Hydraulic and Fittings Divisions of the company.

DUREZ ANNOUNCES 14300 THERMOSET

A new phenolic molding compound, Durez 14300 Black, has recently been placed on the market by Durez Plastics & Chemicals, Inc., North Tonawanda, New York. The material is a general-purpose type, which incorporates certain flow characteristics demanded by the thermosetting molding industry.

The new 14300 Black compound flows readily but the time of flow is relatively short. Back pressure is thereby built up quickly in the mold. This property is particularly desirable where the mold escapements are looser than normal because of wear or other reasons. When used in flash or semi-positive molds that have been in production for a long time, Durez 14300 will provide sufficient back pressure to obtain satisfactory density and surface finish without excessive flash.

Air Preheating

(Continued from page 4)

Below the nozzle disk 17 is a hot air inlet 19 which leads upwardly from an air heating manifold 20. The manifold 20 contains two chromalox finstrip type electric heaters 21.

These heaters receive current through the magnetic relay switch 22, which is controlled by the air switch 23. This air switch keeps the heated air at a constant temperature.

A supply of compressed air at 80 p.s.i. is admitted at the bottom of the heater manifold through pipe 24. The air is turned on when the operator presses the electric switch button 25. This switch in turn starts the timer 26. The timer at once opens the electric solenoid valve 27. The solenoid valve opens the Seeley valve 28 to admit the compressed air directly to the manifold. As soon as the predetermined time set on the timer 26 runs out all valves close and the air is shut off. Air to operate the Seeley valve 28 is regulated by a reducing valve 29 and a pressure gauge 30.

TYPES OF MOLDING POWDERS USED

In the early steps and development of this type of preheating compression molding powders, general purpose molding powder was used exclusively. This variety of material is composed of tiny dust-like particles. These particles stick to the top air filter of the funnel on being heated. This in turn clogs the fine pores in the fiberglas filter and will not allow the passage of the out-going air after a few hours of use. General purpose molding material can be heated easily and rapidly by this method.

In a matter of a few seconds this material can be softened to the point where it can be compressed in a person's hand like a snow ball.

A nodule type molding powder was substituted for general purpose material and worked very well. One of the larger material companies developed a pellet-like material for this type of preheating. This material has a plasticity of 14-15 (Durez plasticity units) and upon heating to 255° F. it will drop to a plasticity of 11. In one molding application a 5¾ pound charge of this material was preheated to the desired molding temperature in 60 seconds.

The materials used in this study were:

Durez 13124
Durez 1905
Durez 42-379
Bakelite BM-49
Bakelite BM-17833
Bakelite 15000E

PHYSICAL CHARACTERISTICS OF THE HEATED MOLDING POWDER AND THE MOLDED PIECE

The average compression molding powder carries a moisture content of around 3%. This, of course, is under normal factory conditions. Upon heating the powder in the preheater the moisture content drops to around 1.5%. Material stored in a warehouse that has picked up considerable water (above 3%) can be dried to the desired moisture content very rapidly when it goes through the preheating process. The length of time and degree of heat that the molding powder is subjected to are factors that must be determined in order to get the best physical properties from the molded piece. The flow properties of molding materials are rather critical. A soft flow material is much easier to heat in this type of preheat than a medium or hard flow.

CONCLUSION

To date the physical properties of these molded pieces have all been equal to any other molded pieces made with different preheating methods.

With more and further research this type of preheating should prove very practical with all types of molding powders.

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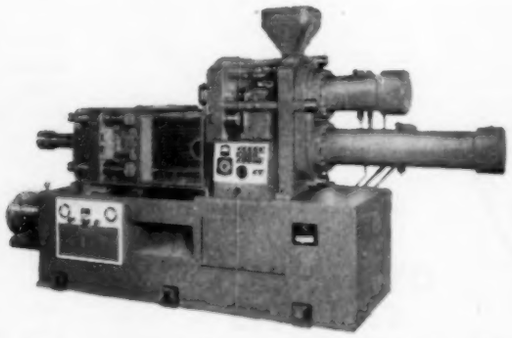

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4803

Plastics in Detroit

By WALTER KOZY

The fact that the conception and origination of the Society of Plastics Engineers first took place in the fair city of Detroit is but one indication of the strong interest there is in plastics in the Michigan area.

The big three of the auto business, Chrysler, Ford, and General Motors, all have their plastic engineering facilities located in Detroit. Chrysler's rubber and plastics laboratory is under the supervision of W. J. McCortney and is located in Highland Park. Here engineers maintain a constant testing and development program on plastic materials which are destined for use in the motor car. Careful studies of all new materials and designs are made before they can be used. Tests and specifications are set up and maintained. Only materials of the highest quality and designs of the highest merit survive.

In addition to the testing program, the Chrysler Laboratory has contributed extensively to new techniques and processes in the utilization of plastic materials. The original developments in jet-molding and the Cousino rubber molding machine are two such contributions that come to mind.

Under the guidance of William Phillips, past president of the national SPE Organization, are the plastic activities of the General Motors Corporation. In the General Motors Building on Milwaukee Street the G. M. Engineers scrutinize, test, and develop the plastic materials which are used on the G. M. cars.

The Ford Motor Company's sprawling plant in Dearborn houses not a few injection and compression molding machines which are kept busy turning out plastics parts for the Ford line of cars, trucks, and tractors. Here, too, are the Ford plastics laboratories where many a new plastic idea has been conceived and developed.

Among the independents, Nash-Kelvinator, with its automobile and refrigerator business, finds extensive use for plastics on its cars and refrigerators. Although the actual molding of the plastic parts is not done in Detroit the engineering and design of the parts and molds originates here.

The Briggs Manufacturing Company has done extensive work in the development of a fast low pressure molding technique which has found application in the interior lining of the Chrysler Suburban. This is but one example of the ingenuity of Detroit's engineers in developing an item for war and then carrying the technique over into peacetime uses on the motor car.

The Woodal Corporation's business is closely tied in with that of the auto manufacturers. Specialists in the handling and fabrication of sheet stock, they have done extensive work in laminates as interior linings for taxi-cabs, etc. They also service the radio and refrigerator industry in the fabrication of large, flat parts such as refrigerator panels, radio housings, etc.

Molded laminates specialists might also be the term applied to Capac Plastics, Inc., headed by Tom Arbion. Originally manufacturers of automotive parts such as sun visors, etc., they now use their phenolic impregnated papers in the manufacture of refrigerator parts and toilet seats.

Fabricon Products, Inc., located in River Rouge might be termed custom treaters. Originally the Detroit Wax Paper Company, they now produce parts for the auto industry along with resin impregnated papers and cloth.

The Detroit Macoid Corporation, pioneers in the dry extrusion of thermoplastics, are also closely tied in with the automotive industry. Their large volume output of plastics extrusions for interior car trims and window linings along with their injection molding and assembly work have made them an important member of Detroit's plastics family.

The largest molding plant in the state is located in Bay City. This is the Bay Manufacturing Division of Electric Auto-Lite. Here again the auto industry is the big customer for the injection and compression molded parts produced.

The Burroughs Adding Machine Company is a good example of an outfit whose plastic products are not especially slated for automotive use. The Burroughs organization does a sizeable amount of injection and compression molding of plastic parts for its line of business machines in its plant on Second Avenue. It maintains a complete engineering organization in plastics including a materials laboratory and mold design department.

Schwab and Frank, Inc. are likewise not especially in automotive products. They are extruders of thermoplastics and fabricators of Styrofoam. Paramount Rubber under LeGrand Daly has done some fine work in plastics, especially in the field of polyester glass laminates. The Universal Button Company on Detroit's lower west side are manufacturers of plastic buttons.

The American Brakeblok Division of the American Brake Shoe Company are extensive users of plastic materials in their marine and industrial bearings, brake linings, tile, cloth and paper laminates, etc. A large product development and control laboratory is maintained.

It is impossible to secure a complete list of all the firms engaged in plastics activity in this area. For this reason only a few of the custom molders and other plastic fabricators can be mentioned. Standard Products in St. Clair, Evans-Winter-Hebb, Wolverine Plastics, Rolind P. Place in Midland, Detroit Molded Plastics, Lyon Incorporated, Molded Products Company, Motor City Plastics, Inland Products, Michigan Molded Plastics, MacDonald Manufacturing, Cadillac Plastics, all fall in this catagory. The indulgence of the many firms whose names are omitted is sincerely solicited.

Of the materials manufacturers, there are two important ones in the Detroit Section area. Reichhold Chemicals Incorporated are manufacturers of phenolic resins and various other chemicals. Their plant, offices and laboratories are located in Ferndale.

Midland, Michigan is the home of the Dow Chemical Company which ranks as about the fourth or fifth largest general-line chemical producer in the country. Over 500 different products are manufactured. Dow plastics include ethyl cellulose, vinylidene chloride, styrene, and various copolymers of the latter two materials. In addition, Dow manufactures plasticizers, solvents, stabilizers.

With this tremendous plastics activity and also the availability of machinery and engineering skills for building tools and dies, it is natural that the Detroit area should develop a plastic mold-engineering and mold-building industry second to none in the country. A list of the mold designers, mold builders, and tool and die shops catering to the plastic industry would read like Detroit's Classified Phone Directory and be almost as big.

Before closing perhaps something should be said about the future of the plastics business in the Detroit Section area. No industry can compete in today's markets or last long in today's world without mechanization. The abandonment of batch processing in favor of continuous methods for mass production; the elimination of hand operations and the substitution of machine methods are things of vital importance to any industry which seeks growth and prosperity. Detroit, with its machine tool, mass-production background is in an ideal position to provide these factors. There is no reason to believe that the men who have made this city what it is shall stop using their imagination, their energies, or their skills. There is every reason to expect that they will continue to lead the way in the development and exploitation of new materials and methods, creating new markets and servicing them with the same old energy and zeal.

Enter the 1949

THIRD PRIZE PAPER CONTEST

WHAT: Until Nov. 15, 1949, the Society of Plastic Engineers will accept as entries original papers, not elsewhere printed, dealing with any phase of plastics or the plastics industry. The papers may not exceed 5000 words.

WHO: Anyone may enter. There are no restrictions as to SPE membership, company affiliation, age or nationality.

WHERE: Submit your entry or entries either to the President of the local SPE section, or to the Society of Plastics Engineers, Athens, Ohio.

PRIZES: $200, $100, $50 for first, second and third prize. Begin working on **your** entry **now!**

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Ask for Bulletin K-200 which is a brief picture story of how Imperial Molded operates. Also Bulletin K-100 showing stock pulls, knobs and handles.

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